

REMARKS

The above amendments and the following remarks are fully and completely responsive to the Office Action dated January 31, 2001. Claims 1-12 are pending in this application. In the outstanding Office Action claims 5 and 12 were objected to; claims 1, 4 and 12 were rejected under 35 U.S.C. § 102(b); and claims 2, 3, and 5-11 were rejected under 35 U.S.C. § 103(a). No new matter has been entered. Claims 1-12 are presented for reconsideration.

CLAIM OBJECTIONS

Claims 5 and 12 were objected to due to the informalities cited in the Office Action. Applicant has amended claims 5 and 12 as suggested in the Office Action. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the claim objection to claims 5 and 12.

35 U.S.C. § 102(b)

Claims 1, 4, and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Yoshida (U.S. Patent No. 4,473,883). Applicants respectfully request reconsideration and withdrawal of this rejection.

Claim 1 as amended, recites a work form-measuring method including the step of placing a work on a waiting position of an auto pallet changer of a machining tool directly after the work has been machined by the machining tool. Thereafter, bringing a probe of a coordinate-measuring machine close to the work in the waiting position of the

auto pallet changer and then measuring the forms and dimensions of the work. The coordinate-measuring machine being arranged in the vicinity of the machining tool.

Consequently, the present invention measures the work at the waiting position of the auto pallet changer (APC) that transfers the work directly to/from the machine tool.

It appears that Yoshida discloses a machining system and control system therefore. This system includes a pallet magazine 11 on which a plurality of pallets PA are carried, with each pallet PA being carried on a pallet table. Located near the pallet magazine 11 are one or more pallet changers APC1 and APC2, associated with a respective machining center MT1 and MT2. Also shown near pallet magazine 11 is pallet changer APC4 which serves measuring unit MUNT (as shown in Fig. 14). Yoshida teaches using a coordinate-measuring machine MUNT to measure the work in a waiting position of an autopallet changer APC4 and then measuring the form and dimension of the work.

While Yoshida discloses measuring the work at a waiting position of a APC.

Yoshida fails to disclose or suggest measuring the work at a waiting position of a APC

(of a machine tool) directly after machining as recited in the current claims.

Consequently, Yoshida fails to teach and/or suggest each element of the claimed invention. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 4, and 12 under 35 U.S.C. § 102(b).

35 U.S.C. § 103(a)

Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshida (discussed above). Applicant notes that it appears that claims 2 and 3

were rejected as being unpatentable over Yoshida combined with Dailey (U.S. Patent No. 4,629,053). Applicants respectfully request reconsideration and withdrawal of this rejection.

The Office Action admits that Yoshida fails to explicitly disclose that the direction of motion of the probe of the coordinate-measuring machine moving to the work is the same as that of a tool of the machining tool moving to the work. The Office Action cites Dailey as correcting this deficiency in Yoshida.

It appears that Dailey teaches a machining system whereby a work piece could be transferred from one standalone machine tool to another standalone machine tool. This transfer is accomplished by using a plurality of work piece transfer units. Upon careful review of Dailey, however, no reference to a coordinate-measuring machine could be found. Furthermore, Applicant could not find any disclosure or suggestion that it would be desirable for the direction of motion of the probe/measurement head of the coordinate-measuring machine moving to the work with the same direction of motion as the tool of the machine tool. Even though Dailey teaches the use of horizontal machining centers with rotating worktables, it appears that Dailey fails to teach and/or suggest the use of a coordinate-measuring machine or that the direction of motion of the probe of the coordinate-measuring machine should move to the work in the same manner as that of a tool of the machine tool moving to the work.

Since Dailey fails to teach and/or suggest both a coordinate-measuring machine and that the direction of motion of the probe of the coordinate-measuring machine moving to the work is the same as that of a tool of the machining tool moving to the work; Dailey fails to correct the admitted deficiency in Yoshida. Therefore, Applicants

request reconsideration and withdrawal of the rejection of claims 2 and 3 under 35 U.S.C. § 103(a).

Claims 5-11 were also rejected under 35 USC §103(a) as being unpatentable over the combination of Yoshida and Dailey (both discussed above).

The Office Action asserts that the pallet magazine 11 of the system described in Yoshida permits the user to set a waiting time for a particular work piece to cool between machining steps. Consequently, the Office Action asserts that due to this time delay, Yoshida fails to disclose one autopilot changer moving the work between a machining position and a waiting position where the forms and measures of the work are measured by a coordinate measuring machine. However, a careful review of Yoshida indicates not every work piece will have a waiting time set for that work piece. Furthermore, if each work piece in Yoshida had a required minimum waiting time, then Yoshida would teach away from the concept of having the work measured while the work was in a waiting position after being machined.

The Office Action asserts that Dailey corrects this deficiency in Yoshida. While Dailey discloses a closed loop machining system in which work on a pallet is displaced directly from one machine tool to the inlet of the next machine tool, Dailey fails to disclose moving a work piece directly from one machine tool to a coordinate-measuring machine, since Dailey fails to disclose and/or suggest the need for a coordinate measuring device in the system disclosed. Thus, it appears that the combination of Yoshida and Dailey would merely teach moving a work piece directly from machine center MT1 to machine center MT2.

Consequently, neither Yoshida nor Dailey teach and/or suggest measuring the forms and measures of the work when the work is in a waiting position after being machined, as recited in the present claims. Thus, the combination of Yoshida and Dailey fail to teach and/or suggest each element of the claimed invention. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 5-11 under 35 U.S.C. § 103(a).

INFORMATION DISCLOSURE STATEMENT

The Office Action indicates that the Examiner did not consider EP 665,481A2 and EP 496,968A1. EP 665,481A2 was not considered because the Examiner did not receive the copy of EP 665,481A2 provided. The Examiner also asserts that the Information Disclosure Statement lacks a translation or explanation of relevance of EP 496,968A1. The European search report considered by the Examiner and provided by the Applicants explains the relevance of these documents (MPEP 609A(3) second paragraph). A second copy of EP 665,481A2 is enclosed for consideration. Accordingly, Applicants request consideration of EP 665,481A2 and EP 496,968A1.

CONCLUSION


Applicant's amendments and remarks have clearly overcome the rejections and objections set forth in the Office Action January 31, 2001. Specifically, the amendments to claims 5 and 12 overcome the objection of these claims. Applicant's remarks have clearly distinguished claims 1, 4, and 12 from the cited prior art and thus overcome the rejection of these claims under 35 U.S.C. § 102(b). Applicant's remarks have also

distinguished claims 2, 3, and 5-11 from the combination of Yoshida and Dailey and thus overcome the rejection of these claims under 35 U.S.C. § 103(a). Consequently, claims 1-12 are in condition for allowance. Therefore Applicants respectfully request reconsideration and allowance of claims 1-12.

Applicants submit that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully request that the Examiner contact the undersigned attorney by telephone, if it is believed that such contact will expedite the prosecution of the application.

The Commissioner is authorized to charge payment for any additional fees which may be required with respect to this paper to Deposit Account No. 01-2300, referencing Attorney Docket No. 107292-09003,

Respectfully submitted,



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Enclosure: Marked-Up Copy of Amended Claims
EP 665,481A2

Check No. 318165



MARKED-UP COPY OF AMENDED CLAIMS

1. (Twice Amended) A work form-measuring method comprising the steps of:

placing a work on a waiting position of an auto pallet changer of a machining tool *spec* directly after the work has been machined by [a] said machining tool; and

bringing a probe of a coordinate-measuring machine close to said work in [a] said waiting position of [an] said auto pallet changer and then measuring the forms and dimensions of said work, said coordinate-measuring machine being arranged in the vicinity of said machining tool.

5. (Twice Amended) A work form-measuring apparatus comprising:
an auto pallet changer of a machining tool for moving a work between a waiting position and a machining position at an inlet of [a] said machining tool; and

a coordinate-measuring machine for bringing a probe thereof close to said work in said waiting position of said auto pallet changer, having been machined by said machining tool, placed on said waiting position, to thereby measure the forms and dimensions of said work.

12. (Twice Amended) A coordinate-measuring machine disposed in the vicinity of a machining tool for getting a probe thereof close to a work in a waiting position of an auto pallet changer of said machining tool, having been machined by said machining tool, placed on said waiting position, to thereby measure the forms and dimensions of said work.